There's No Trying to Reason with Hurricane Season

Multiple storms test flood-control system

Whether boldly marching across the Atlantic, or roiling around the South Caribbean or Gulf of Mexico, the storms of 2004 repeatedly demonstrated the unpredictability and power of Mother Nature.

First, there was a visit by Tropical Storm Bonnie – a mere warm-up for the weather roller-coaster ride ahead. Then direct hits on both coasts from Hurricanes Charley and Frances moved across the state, leaving deluges and devastation in their wake. Follow-up hard rains from the remnants of Hurricane Ivan continued the unwelcome soakings. And an initially indecisive Hurricane Jeanne ultimately added insult to injury by revisiting some of the previously hard-hit areas.

"This year's hurricane season sharply brought into focus the origins of our agency – to first and foremost provide flood control and relief," said South Florida Water Management District Executive Director Henry Dean. "Though some areas experienced problems, thanks to our hard-working and dedicated staff – many of whom suffered damages or total losses of their own homes – we successfully minimized serious widespread flooding in response to extensive rains."

Record-setting rain

From August through September, the Kissimmee basin received approximately 30 inches of rain – a record-setting, 2 1/2 times more than the normal amount for this two-month period. Area lakes filled up quickly and the District initiated maximum safe discharges to the south to help alleviate flooded conditions.

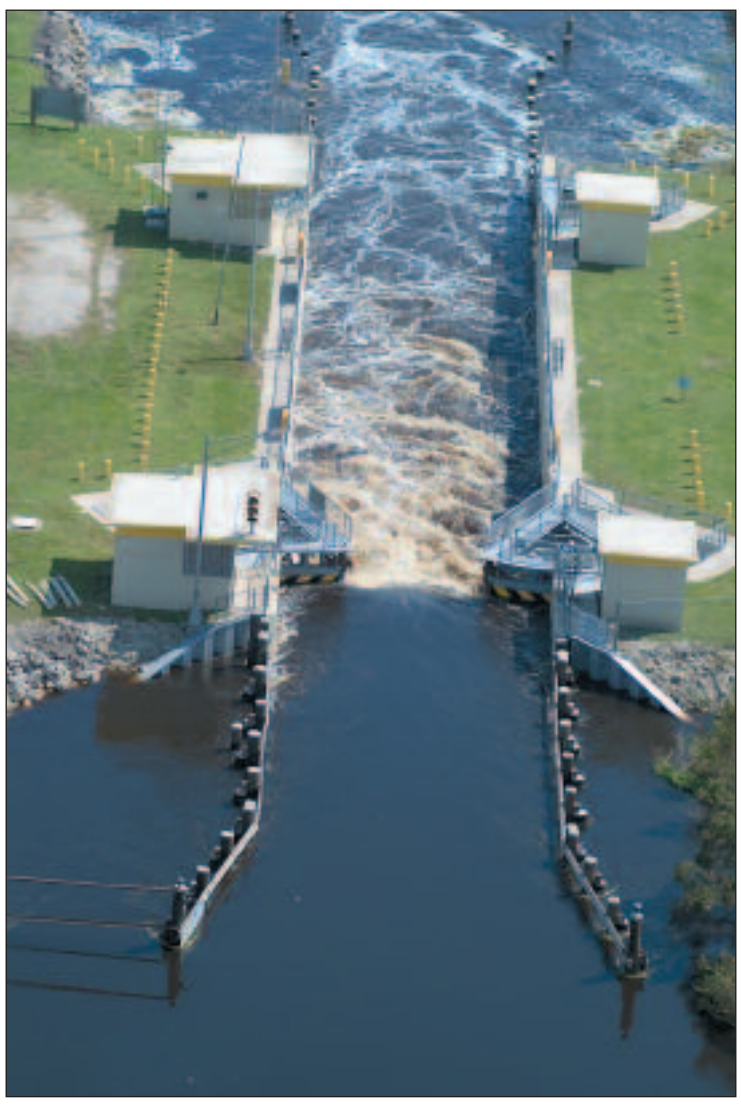
The District's upper east coast, Lake Okeechobee, Caloosahatchee, lower west coast and eastern Palm Beach County basins also received more than 20 inches of rain during this same time. Elsewhere throughout the 16 counties of the District, total rainfall ranged from 14+ to 19+ inches. Some inundated areas were temporarily flooded with standing water, while others saw excess water drain quickly away.

Tremendous inflows from all sources poured into Lake Okeechobee at a peak rate of almost 30,000 cubic feet per second (cfs) or about 13 million gallons per minute. In response, the 730-square-mile lake rose by more than 5.5 feet – from a level of 12.3 feet in early August to just over 18 feet by mid-October. Due to the high downstream flow rate, navigation locks were closed to boat traffic on the north reach of the Kissimmee River and the U.S. Army Corps of Engineers initiated water releases from the lake to the Caloosahatchee and St. Lucie Rivers.

Under these extreme conditions, the regional water management system performed admirably, moving an unprecedented 325 billion gallons of water throughout the system in only two months – an amount that could fill the massive Louisiana Superdome to the rim 347 times.

"We prepared in advance as much as we could, and then, after each storm passed, aerial and field assessment teams conducted inspections and reported back to the District's 24-hour Emergency Operations Center in West Palm Beach," Dean said. "After making sure our employees were safe, our top priorities included debris removal from our waterways; restoring power to our facilities; acquiring fuel for our pump stations, equipment and vehicles; and putting recovery plans into place."

Hurricane Frances reels the Florida peninsula in early September, bringing damaging winds and heavy rainfall throughout the state. Flood-control becomes the District's top priority during severe storm events. (Photo courtesy National Oceanic and Atmospheric Administration)



A tremendous volume of water continues to move through the wide-open gates of the lock (S-65A) on the Kissimmee River north of Lake Okeechobee days after Hurricane Jeanne. Water flowing into the lake peaked at 13 million gallons per minute. This emergency action is unusual but necessary to minimize or prevent flooding

Practiced and prepared

Year-round maintenance and inspections of the regional water management system ensure that the interconnected network of canals, structures, pumping stations and storage areas are ready to perform when needed. In addition, rigorously practiced emergency management protocols and procedures ensure agency-wide response and recovery actions.

Standard District pre-storm actions include lowering canal and lake levels where possible and moving excess water into available storage areas in advance of forecasted heavy rains. To ensure that water can continue to be moved before, during and after hurricane onslaught, the District's major pumping stations are staffed around the clock, with some crews literally "locked-down" inside the facility during the height of the storm. Operations staff monitor water levels and structure positions from agency headquarters in West Palm Beach, making adjustments via computer and electronic communications as needed.

In case of power failures, generators kick-in and field employees are dispatched (when weather conditions are deemed safe) to check the structures and to make any on-site changes or repairs as needed.

Conditions changed dramatically

Prior to the arrival of Hurricanes Charley and Frances, the water level of Lake Okeechobee was low enough to readily handle additional rainfall and inflows. In addition, the environmental drawdown of Lake Tohopekaliga earlier in the year meant that extra capacity was initially available to move and store water in the Upper Chain of Lakes and Kissimmee River.

Everglades Water Conservation Areas were below seasonal levels and could take on additional water as well. Newer resource management projects created other alternatives – including constructed marshes called stormwater treatment areas and the acquisition of commercial "rock pits" located in central Palm Beach County.

But water conditions and storage options changed dramatically after the one-two punch of Charley and Frances, and the follow-up surprise regeneration of Ivan.

The ground was saturated from repeated soakings,

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When hurricanes come calling, the activation of the District's Emergency Operations Center means all hands are needed for preparation, onslaught and recovery activities, especially those picking up the phone for the Citizens Information Line "phone bank." District staffers field calls around the clock, answering questions and relaying information about flooding, canal levels, possible malfunction or damage to structures, downed trees or large debris in canals, or any other type of storm-related condition.

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